



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

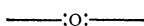
We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

tionist, believing that there is a blood relationship between the branches, twigs, and trunk and roots of his tree-like system, he acknowledges the fact that his graphic presentation of his systematic views really approximately represents what has actually taken place in nature. The branches of his genealogical tree are approximative to what practically are lines of descent or ascent. Certain twigs may be bent backward or downward, and they represent degradational paths, along which retrograde forms have traveled.

The historian of families or of nations constructs genealogical trees, and is it illogical that the naturalist should? Errors creep into historical genealogical trees. No two naturalists may construct the same form of genealogical tree for the same order or class; so no two observers agree as regards the classification of any group. Because our attempts at expressing our conceptions as to the origin and descent of certain groups are imperfect and provisional, it does not follow that the attempt should be ridiculed by those naturalists who are excellent as systematists and anatomists, but who do not work with their thinking caps on.



RECENT LITERATURE.

SEELEY'S HISTORY OF THE SKULL.¹—This pamphlet is a review of the various relations between the skull and the other structures of a vertebrate, with a view "to stimulate some other fellow-worker to seek for the meaning" of the unknown points in the problem. Professor Seeley shows: (1) That comparative anatomy proves an increasing simplification and approximation to the vertebral plan as we ascend the scale from fishes to mammals; yet that embryology shows that the skull originates in structures that have little in common with the vertebræ. (2) That a skull is difficult to define, for the branchial arches appear to be survivals of the somatic clefts of *Amphioxus*, and the visceral clefts of an embryo mammal are homologous with the branchial arches of a fish. (3) That a skull, as usually understood, consists of, first, a brain-case; second, of jaws, and third, of structures connected with respiration, which parts may, as in the sharks, have been originally separate. (4) That the bones surrounding the nasal, optic and auditory capsules are remarkably constant, especially the latter, so that it would appear that a brain-case "is a union of ossifications about sense-capsules that have come to surround the brain," yet this will not explain either the number or arrangement of the bones. (5) That the cartilaginous cranium originates from the parachordals and trabeculæ, which primitive elements do not suggest that tri-partite segmentation of the skull which is finally devel-

¹*The History of the Skull*, by Professor H. G. Seeley, F.R.S., F.L.S. Read before the Science Society, of King's College, London.

oped. (6) That although the cartilaginous cranium (as that of the shark) becomes segmented in higher animals, that segmentation follows some law, which law may probably be found in a repetition in the skull of the manner in which, when the vertebral column becomes segmented, the lines of division pass through the middle of each protovertebra—thus their parachordals and trabeculæ would, by median division after the union, form three portions. (7) That of the median bones of the base of the skull, the pre-sphenoid, which is a *median* vertebral element formed by the *paired* trabecular cartilages, that theoretically ought not to form such an ossification, can only be explained by the law that “the longer a type endures in time the more perfectly is the vertebral plan of that type superimposed upon the skull.” (8) That the distinction of “membrane bones” and cartilage bones is not one of great importance, the former arising simply from the fact that the nervous substance of the brain “grows up so rapidly that the cartilage elements are unable to cover it.” (9) That the face originates in the jaws, which in elasmobranchs are separate from the skull. The jaws are developments of the mandibular cartilages, so that embryologically the lower jaw is the most important. The facial bones seem, as suggested by Balfour, to form two series, the inner consisting of vomer, palatine and pterygoid, the outer of maxillary, inter-maxillary and jugal. “It is quite possible that the six bones of the lower jaw, which in the lower vertebrates may be ranged into an outer and inner series of three each, correspond to the inner and outer bars of the palato-maxillary region? If the segmentation is not carried downwards from the brain-case, it is difficult to account for it.” Yet whatever explains the segmentation of the hyoid and branchial arches will also account for that of the face. Professor Seeley thinks it possible that the nasals, the labial cartilages of the elasmobranchs, are the basis of the nasals and premaxillaries.

Why any of these cartilages, including the branchial cartilages, should first come into existence as they do, without any obvious relation to skull structure, and yet finally become the framework of the skull is beyond the limits of knowledge, and the only key (here Professor Seeley exhibits Lamarckianism equal to that of some of our American naturalists) “is found in the law that function modifies, molds and originates structures, on the basis of antecedent organization.” Professor Seeley also lets fall the pregnant remark that many of the difficulties of comparative anatomy may possibly vanish when “embryology becomes the servant instead of the law-giver of morphology.”

GRAFF'S MONOGRAPH OF THE TURBELLARIANS.¹—The two volumes folio of text and plates (all from the author's own drawings) are devoted to the Rhabdocœlida, of which Professor Graff has

¹*Monographie der Turbellarien*. I. Rhabdocœlida. Dr. LUDWIG VON GRAFF. Leipzig, W. Englemann, 1882.